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EDITORIAL.—THE OXFORD BOTANICAL GARDEN is pleasantly described by a correspondent of the *American Agriculturist* who is traveling in England. It is said to be the oldest Botanical Garden in England, if not the oldest in existence. It was completed in 1663. "It was pleasant to meet with many of our familiar American plants, conspicuous among which was our Poke or Pigeon-berry. Another home plant was our Cardinal Flower (*Lobelia cardinalis*), the flowers of which were much larger than at home, but not of such an intense scarlet."

THE TORREY BULLETIN has begun the publication of a list of the state and local floras of the United States. The October number contains such a list for the New England States, and as far as we know it is quite exhaustive. Assistance is asked in making the list as accurate as possible.

DR. T. F. ALLEN calls attention to the fact that the same similarity between the floras of Eastern Asia and America is noticeable among the *Characeæ* as has been observed by Dr. Gray with respect to higher plants.

THE SYRACUSE BOTANICAL CLUB still continues to be one of the most active clubs in the country. During the past season they have taken 29 club excursions, and combining profit with pleasure, have realized over twenty dollars from them. An Authors' Party brought them in ninety more, and thus they are able to order an herbarium case, rent a room, and buy some microscopes and books. They are working towards publishing a complete catalogue of the flora of Onondaga county and most certainly deserve all the success that has come to them in such liberal measure.

HABENARIA GARBERI should have been described in the last number of the GAZETTE with "lips longer than the perigone," instead of "lips larger."

MR. A. H. CURTISS has undertaken to collect Baron Eggers' set of West Indian plants and hence will probably issue but one more set of U. S. plants. Those who have felt uncertain about Baron Eggers' specimens will now feel perfectly safe in ordering sets, as Mr. Curtiss' fine specimens are to be seen in almost every herbarium in the country.

A SUMMER ON ROAN MOUNTAIN.—This mountain ever since Dr. Gray's first visit in 1841, has been a *locus classicus* to botanists, though but few have visited it.

Three years ago a party of fifteen from the Nashville meeting of the American Association made the ascent, by invitation of Gen. Wilder, the owner of the mountain, and the writer collected largely at that time. During the past summer an almost continuous scientific convention has been informally assembled on the summit; Profs. Goodale and Gibbs, of Harvard; Prof. T. C. Porter, of Easton; Dr. Leidy and Messrs. Thos. Meehan and Joseph Wilcox, of Philadelphia; Capt. J. Donnell Smith, of Baltimore; Profs. Phillips and Symonds, of Chapel Hill, and Mrs. Geo. Andrews, of Knoxville, being of the number, so that not only the plants but the minerals, the rhizopods, the mollusks and the meteorology were all looked after.

It was the writer's good fortune to remain there from June 25th through July and August, and this article will give some notes of the results of his labors.

The mountain is reached from Johnson City on the East Tenn., Va., & Ga. R. R, and from Marion on the W. N. C. R. R. The former route is by stage 32 miles, and takes from early morn till nearly dark, over a preposterously rough road. The first ten miles lie along Buffalo Creek, through a limestone country, presenting the common plants of the region, the only thing of special botanical interest being *Asplenium parvulum*, on a limestone ledge. Crossing a slight ridge, we strike the waters of Indian Creek, running through a quartzite country, and in less than half a mile the flora undergoes a complete transformation. In a few minutes we are riding through the thickets of *Abies Canadensis* (Hemlock), *Rhododendron maximum*, and *Leucothoe Catesbœi*, called "laurel," and said to be fatal to horses.

Calycanthus floridus is noted, also *Asarum Virginicum*, under the bushes, with its glossy evergreen leaves, and *Oxydendron arboreum*, conspicuous with its long white racemes. Ten miles further on we cross Iron Mountain, at an elevation of 1500 feet above the valleys on either side, and see large patches of *Galax aphylla*, with its white spikes, and along the roadside, *Leucothoe recurva*, *Clethra acuminata*, and *Magnolia Fraseri*. From the summit we catch our first glimpse of Roan, and then dashing down the valley of "Big Rocky," four miles bring us to its base, 2900 feet above the sea, and we look up to the summit 3500 feet above us, and seven miles distant by the road.

Between 3000 or 4000 feet of altitude we notice the enormous chestnuts, *Castanea vesca*, one measuring 24 feet in circumference, and hundreds of others five and seven feet around and running seventy or eighty feet without a limb. A little higher *Acer saccharinum*, *Magnolia acuminata*, *Liriodendron Tulipifera*, *Betula excelsa*, *Tilia Americana*, *Æsculus flava* attain enormous dimensions. One specimen of *Prunus serotina* (black cherry) was measured, which was 19 feet in circumference and probably 70 feet without a limb, and straight as a pine.

About sunset we reach the summit, which, unlike the Northern Appalachians, is a smooth grassy slope, containing, perhaps, 1000

acres, with rocky bluffs at the northern and southern ends, a mile and a half apart, named respectively Roan High Knob and Roan High Bluff, rising about 100 feet above the slope, the former reaching an altitude of 3690 feet. The soil is deep, rich and black, the green turf dotted with clumps of *Alnus viridis* and *Rhododendron Catawbiense*. This latter presents one of the most beautiful sights that can be imagined, with its domes of rosy inflorescence 6 and 8 feet in height, and so abundant that the whole mountain top is colored by it. The distinction between this and *R. maximum*, founded on the shape of the leaves and the tomentoseness of young leaves and branches, is hard to be maintained, in many cases. But the color is unlike any of the numerous shades of *R. maximum* and the capsules are smooth, while those of the other are viscid hairy.

The hotel is built of logs, but is comfortable enough for a botanist, and comfortably kept by Mr. L. B. Searle, who engineered the road up the mountain.

The average daily temperature is from 55 to 65 degrees; twice the mercury reached 75 degrees for an hour or two, and once it was 45 degrees. The spring which supplies the house has a temperature of 45 degrees. Roaring fires are in demand morning and evening.

The first thing to be done, was to secure specimens of those early species which were going out of flower. After that, the daily task was to watch the successive blooming of different species, and to explore new localities.

In moist places we find abundantly *Diphylleia cymosa*, *Cardamine Clematitis*, *Saxifraga erosa* and *leucanthemifolia*, *Ligusticum actæifolium* and *Chelone Lyoni*.

In the woods occur plentifully *Thalictrum clavatum*, *Astilbe decandra*, *Arisæma polymorphum*, the common species on the mountain, with leaflets less acuminate than *A. triphyllum*, and the lateral ones rhomboidal, when not lobed, sometimes one, sometimes two-leaved, *Ilex monticola*, *Vaccinium erythrocarpon*, "a blueberry bush with a cranberry flower," *Menziesia ferruginea*, var *globularis*, a straggling rusty shrub, with the blossom of a checkerberry, and *Galium latifolium*.

Lower down are found plentifully *Blephilia hirsuta*, *Pycnanthemum montanum*, *Rudbeckia laciniata*, *Cacalia reniformis*, *Monarda fistulosa* and *didyma*, *Lophanthus scrophulariæfolius*, *Scutellaria versicolor*, *Veratrum parviflorum*, and many other species more or less common elsewhere.

In the open plains we collect *Trautvetteria palmata*, *Arenaria glabra*, *Houstonia serpyllifolia* (everywhere forming extensive patches, so as to interfere with the grass) *Houstonia purpurea*, var. *montana*, and *Danthonia compressa*. Among the rocks and on the edges of the precipices are found *Paronychia argyrocoma*, *Geum radiatum* and *geniculatum*, *Heuchera villosa*, *Sedum Rhodiola* and *telephioides*, *Œnothera glauca*, *Angelica Curtisii*, *Cynthia Dandelion*, var. *montana*, *Vaccinium Constablæi*, *Leiophyllum buxifolium*, var. *prostratum*, *Campanula divaricata*, *Cuscuta rostrata*, *Agrostis rupestris*, *Carex æstivalis*, *debilis*, and

juncea, and *Lycopodium Selago*, and under overhanging cliffs, the delicate little *Saxifraga Careyana*.

The most conspicuous and beautiful of all, except, perhaps, the Rhododendron, is *Azalea calendulacea*, with the flame colored blossoms varying from golden yellow to crimson, and seeming as if the mountain side were on fire.

Several excursions to Little Roan, four miles away, and of nearly equal height, gave us in addition and in great profusion, *Delphinium exaltatum*, *Silene Virginica*, *Liatris spicata*, *Rudbeckia triloba*, *Cirsium muticum*, *Castilleia coccinea*, *Physostegia Virginiana*, and *Melanthium Virginicum*, with conspicuous white flowers. A tramp of eight miles to Roaring Rock was rewarded with several fine specimens of *Aconitum reclinatum*, with blossoms rather more blue than white.

Cimicifuga racemosa and *Americana* are abundant everywhere, the latter a month later, succeeding the former and easily distinguished, even at a distance, by the radiate arrangement of its stamens.

The most abundant plant is *Eupatorium ageratoides*, covering the whole mountain for 2000 or 3000 feet of perpendicular height, until replaced below by *Verbesina Siegesbeckii*.

The Compositæ are well represented in local forms. *Solidago spithamæa* and *glomerata* are abundant on precipices, *monticola* and *pubens* in open woods, and *Curtisii*, entirely replacing *cæsia* on the sides of the mountain. *Nabalus Roanensis*, n. sp. occurs in the clefts of the rocks

Aster Curtisii is found on the sides of Iron Mountain, and was noticed abundantly along the railroad.

Perhaps the most interesting plant is the rare and beautiful *Lilium Grayi*. The specimens found were well marked, 1 to 5 flowered, horizontal, not nodding; segments not at all recurved nor even spreading; the flowers smaller, more truncate in outline, and much darker than *L. Canadense*. The persistent and careful search of all the botanists, with efficient help from many others, brought to light only 10 specimens, all growing in clumps of Alder or Rhododendron, and thus protected against cattle, sheep and hogs, those enemies of all botanists, who bid fair at no distant time to exterminate it from Roan. It is to be hoped that the Peaks of Otter, its other known locality, may not be thus ravaged.

Abies Fraseri is plentiful near the summit, and very conspicuous with its abundant erect fringed cones.

The turf is of a most vivid green even in August, and seems to be made up of *Poa annua*, *Danthonia compressa*, and perhaps some early flowering *Carices* *Poa compressa* occurs on Little Roan.

Several mollusks have been detected on the mountain, by Mrs. Andrews, either very rare, or unknown elsewhere.

A trip to Bakersville, ten miles away, was rewarded by *Helianthus microcephalus* and *atrorubens*, and *Euphorbia Lathyris*, the latter thoroughly naturalized along the roadsides and very conspicuous.

Of most of the species enumerated above I have an abundant

supply, which I will exchange for U. S. species not in my herbarium, or will sell at ten cents a specimen.—J. W. CHICKERING.

CARNIVOROUS PLANTS.—The advance of science and of human insight into the workings of Nature compel us to admit what seems at first almost incredible, that it is as natural and normal for some plants to derive their sustenance from the animal tissues by a true process of feeding, as it is for the animal to feed upon plants and gain maturity and strength thereby.

The fact that certain plants, such as *Drosera*, *Dionæa*, *Sarracenia*, *Utricularia* and others, obtain at least a portion of their nourishment from animal food by process of digestion, absorption and assimilation, has been developed more during the last generation than at any previous time, although the peculiarities of one of these plants were known and noted during the latter part of the eighteenth century. Dr. Darwin tells us that the oldest and most valuable paper published previous to 1860 was written by Dr. Roth in 1782. Much has been recorded, in a general way, in our various journals, concerning these plants, but only a small proportion of these papers are of much value.

However, interesting as the discussion of the bibliography of this subject in its various relations and a review of the arguments both for and against the carnivorous characters of these plants, would be, it is not my intention to enter into a consideration of the general subject, even if space would permit, but to simply record my experiments and observations upon the interesting division of these plants—the genus *Sarracenia* and the family *Droseraceæ*. For an extended review the reader is referred to Darwin's work on the "Insectivorous Plants," and also to articles in Gray's Darwiniana.

It is the intention to publish these records in series, divided according to the time and purpose of experimenting and observations.

At the head of each series notes explanatory in general of all the experiments enumerated will be given.

SERIES I. Experiments on *Drosera rotundifolia*.

General observations. The plants upon which experiments were instituted in this set were under cultivation. The surrounding conditions were, as near as it was possible to make them, the same as those in which they grow naturally.

The amount of light, moisture and air was regulated with great care. The plants were watered at 8 a. m. and 6 p. m., daily, throughout the entire time of experimenting. It is worthy of note that the plants blossomed also during this time

As to the size of the leaves and the general vigor of the plants, they were the *finest* specimens that I could find. They were obtained at a lake, three miles west of Ann Arbor, Mich.

EXPERIMENT NO. 1.—A piece of an angle worm was placed upon the center of a leaf at 2 p. m., June 4th, 1879.

15 min. no change.

30 " submarginal tentacles inflecting and a few nearest the substance were touching it.

45 min. the submarginal tentacles on one side of the leaf were much inflected, so as to touch the specimen.
60 " the same as the last, except the upper submarginal tentacles begin to inflect.
90 " marginal t. beginning to inflect.
2 hrs. only a slight change.
2½ " the submarginal t. nearly all inflected, and these nearest the substance touching it.
3½ " slight change among the marginal t.
18 " the submarginal and marginal tentacles inflected so as to touch the specimen on one side; the remainder inflecting slowly.
24 " change only slight.
38 " all the submarginal inflected and touching the substance, and, also, nearly all the marginal tentacles.
48 " all the tentacles inflected, touching the substance; the edges of the tentacles are also slightly inflected
66 " tentacles and edges of the leaf closely clasping the specimen.
123 " the same as the last, except the edges of the leaf are beginning to reflex.
159 " edges of the leaf reflexing slowly, but all of the t., except a few marginal ones, are still inflected.
166 " leaf gradually opening.
216 " leaf nearly expanded, but most of the t. still inflected somewhat.
302 " tentacles reflexing rapidly.
312 " tentacles, both disk, marginal and submarginal, on one side much reflexed.
326 " tentacles apparently dried - not much reflexed from the last.
408 " no change, excepting that the ones already partly reflexed are more so.
528 " tentacles considerably dried; leaf without color; substance dried; no secretion.
600 " leaf and tentacles still somewhat inflected, but all parts apparently gradually opening.
648 " same as the last; a white mould present on the leaf; tentacles, especially the ends of some, dry; no secretion.
672 " no mould present; one side of the leaf dry and dead.
768 " leaf completely dried and dead. - W. K. HIGLEY, *Ann Arbor, Mich.*

BROWN UNIVERSITY HERBARIUM.—In addition to the classical herbarium of the late Stephen T. Olney, bequeathed to Brown University, together with a fund for its increase and for the maintenance of the botanical library, the college has, within a few weeks, received from Mr. James L. Bennett, of Providence, a gift of his herbarium of 13,000 species. This valuable collection has been amassed during thirty years of unremitting labor as a side occupation. In it are rep-

resented nearly all the regions of the globe—even some of the most remote and inaccessible. The specimens are in fine condition, but mostly unmounted. The University accepts them on Mr. Bennett's terms, which are simply that they be mounted, cased and properly cared for; also, that they be made available to botanical students under proper restrictions. Mr. W. W Bailey, since 1877 Instructor of Botany at Brown, has now the additional title and duties of Curator of the Herbaria. The united collections of Messrs. Olney, Bennett and Bailey, make a nucleus of which any institution might be proud. It is well known that Mr. Olney was a specialist of high rank in the study of *Carex* and his collection of Carices must remain classic. The herbarium is, however, rich in American botany generally, and contains some fine special *suites*, as Robbin's *Potamogetons*, Sullivant's and Austin's Mosses. Wright's Cuban Plants, Hall and Thurber's and Fendler's collections, &c. Accompanying *Carex*. are the exquisite colored drawings by J. H. Emerton, made under Mr. Olney's direction, to illustrate his projected monograph of the genus. Valuable notes accompany these. Mr. Olney's botanical correspondence covers many years and is of peculiar interest. It contains letters from all the leading botanists of America.

The curator takes pleasure in calling attention to the Brown University Herbarium, and asks aid of his scientific friends in increasing and extending its usefulness. Every courtesy will be extended to visiting botanists.—J. M. C.

DEATH OF AN OLD BOTANIST.—Dr. S. B. Mead died at his home in Augusta, Illinois, Nov. 11th, 1880, in the 82d year of his age. He was born in Connecticut, graduated from Yale College in 1820, and in 1834 settled in Augusta. In the practice of his profession, taking long rides over the prairies in every direction, he had an opportunity to study the flora of the region before it was disturbed by cultivation. He collected largely and made some interesting discoveries, his best find being *Asclepias Meadii*, which is a rare plant in collections even now. He exchanged with the leading botanists of the past generation and did not lose his interest in botany up to the day of his death. The writer visited him last spring, found him active and in good spirits and took pleasure in looking through his collection with him. His death was caused by a fall several weeks previous, but he was able to be about until the last and died with very little suffering. His collection includes many interesting Western and Southern plants gathered by Hall, Lindheimer, Ravenel, T J. Hale, M. A. Curtis, Dr. Short and others. It would make a valuable present to some college, or would enrich the herbarium of almost any private collector. It will be disposed of together with his botanical library, by his widow, Mrs. S. B. Mead, Augusta, Ill.—*

CONTRIBUTORS to Mr. S. T. Olney's *Carices Boreali Americana* are requested to communicate at once with Mr. James L. Bennett, of Providence, R. I., who has been requested by President Robinson,

of Brown University, to which Mr. Olney gave his botanical collection by will, to complete the distribution so far as the plants received and determined by the testator will allow. Mr. Bennett, in assisting me with his great experience, has had sole charge of *Carex* and brought neatness and order out of much that was chaotic. He will be prompt to respond to any and all inquiries.—W. W. BAILEY, *Curator, Brown University Herbarium.*

RECENT PUBLICATIONS.—*Check List of North American Gamopetalæ after Compositæ* —This is a very neatly printed pamphlet of 12 pages, published by Harry N. Patterson, Oquawka, Ill. Mr. Patterson's printing is well enough known to be its own recommendation and the list given will be of very great use. We very much need a new and complete check-list of all our North American Phænogams and Vascular Cryptogams, with every species numbered as in Mann's Catalogue. It is vastly more convenient to write out a list of numbers than of long botanical names. For price see the advertisement.

Practical Uses of the Microscope —This is included in the Inaugural Address of Dr. R. H. Ward to the American Society of Microscopists. No one could be much better fitted for speaking upon such a subject than Dr. Ward The practical use most largely spoken of is what may be called the legal use, such as the examination of signatures, etc. With considerable curiosity we looked through the pamphlet to see the opinion of such high authority concerning the practical importance of the binocular arrangement. This is what we found: "The binocular arrangement has grown from an experiment of disputed value to a priceless luxury if not a literal necessity." We would like very much to know from our working histologists how much they use the binocular arrangement, and if they use it at all, with what powers.

On the Microscopic Crystals Contained in Plants. —Mr. W. K Higley, of Ann Arbor, has been examining a great many plants with reference to their crystals and the results are brought together in this paper, a reprint from the *American Naturalist.* The crystals are considered under the three heads of Raphides, Sphæraphides and Crystal prisms These names have already been defined in a previous notice, but it may be said further that Mr. Higley's observations seem to show that the raphides are composed of phosphate of lime, the acicular or crystal prisms of oxalate of lime, the cubical crystals of carbonate of lime, the sphæraphides of the same base combined with different acids according to locality. The author thinks that their great abundance would point to some use to the plant itself. Two uses to man are suggested, first. that the phosphates these crystals contain may strengthen bones, and second, through decaying leaves and stems they act as a fertilizer. A list of 71 phænogamous families is given, known to contain crystals, 46 being exogens and 25 endogens.

Useful and Noxious Plants.—This is the first annual report upon this subject by Prof. T. J. Burrill, Botanist of the Illinois State Board

of Agriculture. It makes a pamphlet of 9 pages, two being devoted to "Trees," one to "Noxious Plants" and six to "Fungi on Living Plants," which, of course, shows the direction of the writer's principal observations. The Catalpas are noticed, and also White and Green Ash and Spanish Oak. Under the head of Noxious Plants are included what we loosely call "weeds." Some of the most pestiferous are mentioned and especial attention called to the fact of their wonderful fecundity. The part on Parasitic Fungi is by far the most important as it gives some account of a group of organisms very important to farmers and very little understood.

On the Development of Lemna minor.—This is a four-page pamphlet with plate, reprinted from the Proc. Acad. Nat. Sci. of Phila. The author, Mr. Wm Barbeck, had his attention called to the so called "bulblets" and after careful investigation has come to the conclusion that they are in reality regular *seeds*, from which, however, the fronds are propagated in a peculiar and interesting manner. The figures given are taken from sections which he has mounted and hence may be compared at any time. The closing sentence gives the author's conclusions. "My investigation has been made only on the *Lemna minor*, but there is no reason to doubt that in the development of the whole family of *Lemnaceæ* (analogous to our species) we have an interesting instance of parthenogenesis, there being seeds (produced in autumn by a sexual process) from which, during the course of the summer, generation after generation is propagated without any further fertilization."

On the Timber Line of High Mountains.—Mr. Thos. Meehan in a paper before the Acad. Sci. of Phil. upon this subject, came to the following conclusion:

In view of the facts detailed we may conclude that at the elevation of these mountain chains, the lowland vegetation was carried up at the same time. The summits, covered by luxuriant forests would present a cooler surface to the moist clouds, and there would be less condensation than on bare sun-warmed rocks, and deep snows would be less frequent, and not sufficient to interfere much with arboreal growth. But the rain would of necessity carry down the earth and disintegrated rock to lower levels; and the melting snows, such as there were, would make this downward progress of the soil continuous. In some mountains where the rock was easily broken by frost, as in Colorado and the White Mountains, it would be very difficult for the soil to hold its own against these forces of gravitation; but on more solid rock the mass of tree roots protecting the rock, and retaining the earthy matter would longer hold its own. In the former case with the gradual washing away of the earth the larger trees will have to find a lower level; the summit condensing more moisture, and having a cooler atmosphere, would form heavier masses of longer enduring snow, and thus keep down from tall growth the younger trees left as the older and larger ones retired. They would have to be low bushes by the absence of earth for vigorous growth, and remain

trailing bushes, through the superincumbent and long continued mass of snow.

We thus see that though a long continued mass of snow has much to do in marking a timber line, that line is precedent to the snowy mass. The primary cause is the gravitation of disintegrated rock—the movement of the hill top towards the sea. From the moment the mountain reaches its highest point it commences its downward march. The entire reduction of the highest to a level with the plain is but a question of time. The frost and rain and melting snow will do it all, and this reduction, bringing down not only the earth, but cold-loving plants to warmer levels, must continually change the aspects of vegetation, as well as perpetually vary the timber line.

In low hills as well as in high mountains the forces of gravitation are also at work. But the sides are seldom so steep as in the loftier hills—the rains do not gather with such force nor are the melting snows of near the same duration. There are sudden washes, but not the continuous roll of the earth to the bottom. In time they may exhibit the same phenomena of the disappearance of species from their summits as their loftier brethren; but the centuries here will gather much more slowly to produce a similar effect.

In conclusion we would say briefly that the "timber line" of high mountain tops results from the washing down of the earth from the higher elevations.

NOTES FROM UTAH.—*Corydalis Caseana*, Gray.—I have added two stations more to that of last year for this plant. One station is in American Fork Canon, 7,500 feet altitude; the other, above Silver Lake, at 11,000 feet altitude. It is difficult to secure good seed, because an insect infests the pods and destroys the seeds; but I have secured a small quantity. The bursting of the pods is interesting. They split at the end, and the segments coil up with such rapidity that the seeds are thrown three feet or more. I believe this plant has never been discovered north of Arizona before, and is rare there.

A remarkable monstrosity of *Ranunculus Cymbalaria* occurs here. The flowers (ten or twenty) are united in a half circle, making one large flower with ovaries arranged in a half moon and surrounded by from one to two hundred petals.

Dicentra uniflora, Kellog.—This is not uncommon in City Creek Canon; but, unlike Coulter, I found leaves only with the exception of a single faded flower.

Streptanthus cordatus.—The petals are twice the sepals, and stems are often branched.

Vesicaria montana.—This occurs as far south as St. George.

I have a variety of *Arabis arcuata* with pods much wider at tip than at base. The siliques of *Lepidium Wrightii* are frequently hairy on the edge. The leaves of *Arabis Lyallii* are as often auricled as sagittate. *Capsella divaricata* has the appearance of an introduced plant at St. George, where it is very common.

The roots of *Stellaria Jamesiana* are thickened into a long series of tubers.

Vicia exigua occurs as far north as Holden (100 miles south of Salt Lake City.) It has not been reported further north than St. George before.

The stems of *Astragalus junceus* are very seldom "solitary." They usually grow in clumps of twenty to a hundred.

A. pictus var. *filifolius* is found at Frisco and Milford, the western border of Utah, one hundred miles north of St. George.

Cercocarpus ledifolius, var. *intricatus*.—I propose this name for Watson's *C. intricatus*, which cannot rank as a species, as Dr. Parry has shown already; but I think it deserves to rank as a variety and not as a "form" (Parry), because of the altitude at which it occurs, 6000 feet, and the apparent distinctness of the extreme forms. This is from 1 to 3 feet high, densely and intricately branched, usually depressed; leaves linear, 6 to 12 lines long, 1 line wide, very revolute, sparsely pubescent, flowers and fruit two and three times smaller than the typical form. Its present known range is from American Fork Canon to Cedar City. It appears to grow on rocks almost exclusively. Watson found it near the mouth of American Fork Canon, where it occurs in the extremme form only. Higher up it occurs more sparingly, and in less rocky places shows an insensible transition to *C. ledifolius*. I have found it as high as 11000 feet altitude, growing along with *Juniperus communis*, var. *humilis*, Eng. (*J. communis*. var. *alpinus* of most authors), several hundred feet above *Primula Parryi*. near *Synthyris pinnatifida*, *Ranunculus adoneus*, etc.; but its usual range is at about 6000 feet altitude.

Who described *Tellima tenella*? Watson gives it as of Hooker and Bentham (King's Exp. p. 95), Watson and Brewer give it as of Watson (Fl. Cal. V. I. p. 198), and Rothrock gives it as of Walp. (Wheeler Rep. p. 117). The Rocky Mountain *Cratægus*.—I have spent much time in studying this plant, and have collected a full suite of specimens, from the buds to the fruit. The leaves on branches which bear flowers are lanceolate or ovate lanceolate and acuminate, narrowly cuneate at base; other leaves vary from acuminate to barely acute, lanceolate to broadly oval, cuneate or tapering at base; petals orbicular, entire; calyx segments linear or linear-lanceolate usually with a broad base, purple, glandular ciliate; bracts filiform, purple, deciduous; thorns almost none, or abundant. *Ribes aureum* is abundant at St. George. There is a variety of it growing here that has *yellow* fruit and a disagreeable taste I have *Ribes leptanthum*, var *brachyanthum* from Frisco, as well as Lake Point. *Mentzelia levicaulis* occurs as far south as Frisco.

The fruit of *Cymopterus glaucus* is densely pubescent; stamens purple.

C longipes is abundant at Juab, and occurs at Frisco.

I have another species of *Cymopterus* that appears to be new also.

The petals of *Orogenia linearifolia* are white. It blooms close to

snow in the early spring; is very evanescent. Within a few weeks after the plant appears, it has bloomed, fruited, dried up, and blown away, leaving no trace behind save a few seeds in the sand. I have the flowers from Scipio (30 miles north of Fillmore) and plenty of good fruit from City Creek Canon where it is common. The leaves are frequently 6 lines wide. *Peucedanum simplex* is occasionally branched as well as leafy. The fruit is never "orbicular" in any Utah specimens I have seen. It is abundant here.

P. millefolium has yellow flowers, not "white." It occurs in the Wasatch and south to Frisco.

The fruit of *P. villosum* I have in fine condition. The oil-tubes are either wanting, or one in the intervals and two outside of the ribs. On the commissure are numerous grooves but the oil-tubes appear to be wanting or imperfect. I have P. *Newberryi* from Frisco. The fruit varies greatly.

The fruit of *P. Nevadense* is glabrous; varies from oval to narrowly oblong, always emarginate at base in my specimens.—MARCUS E. JONES, *Salt Lake City*.

NABALUS ROANENSIS, n. sp.—Stem simple (3 to 12 inches high), hirsute sparingly, and on the veins on the under side of the leaves and the peduncles abundantly, with long, transparent hairs; heads in short axillary racemes forming a close racemed panicle; leaves 1½ to 2 inches long, triangular halberd shaped, acuminate, coarsely toothed, on slender petioles, the lower 2 or 3 inches long, and winged above; involucre 10 to 13 flowered, of 7 to 10 light green linear scales, with dark obtuse tips, hairy in a line along the middle, and 3 or 4 dark green, triangular ovate, bract-like, densely hairy ones, at base; pappus straw color.

The leaves resemble those of *N. alatus*, the flowers are somewhat like those of *N nanus*.

Found sparingly on the summit of Roan mountain, N. C., growing in the clefts of precipices.—J. W. CHICKERING.

THE GAZETTE FOR 1881.—This number closes Vol. V, and very soon No. 1 of Vol. VI will appear. We take this opportunity of urging our friends to renew their subscriptions at once and to aid us in obtaining as many new ones as possible. The long lists of botanists in our Directories shrink to a very small per cent upon the pages of our subscription book. For the credit of American Botany we ought to be able to generously support two modest journals.